

Race and Computing: The Problem of Sources, the Potential of Prosopography, and the Lesson of *Ebony* Magazine

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Historians recognize the need to examine race and technology, but published scholarship has not kept pace. This has been attributed to the absence of archival source materials. In response, scholars have approached “race” from a broad definition, rather than having sought to place persons of color who contributed to the development and innovative application of computing into the historical record. It remains critical to do so. Archives and libraries should undertake to identify and collect materials from persons of color. Meanwhile, scholars may find material in nontraditional sources, and prosopography may prove useful for examining computer professionals of color. At least 57 African Americans working in computing fields between 1959 and 1996 are listed in *Ebony* magazine. If computing has had little to say about persons of color, it may be better to examine what communities of color have had to say about computing.

Over the past few decades, historians have increasingly recognized the need to examine the intersection of race and technology. Although recognition of this need has grown, scholarship itself has not kept pace, especially compared with the relative success found in explorations of gender. This situation is possibly even more acute specifically in the history of computing. The lack of scholarship on race and technology has been attributed, at least in part, to the lack of source materials available in archives, the conventional source for historians working in the field. This has prompted scholars to consider analyzing race from a broad perspective that examines the role of “whiteness” in shaping technology and the industry, rather than attempting to insert persons of color into a history that has predominantly focused on the accomplishments of white men.¹ While alternative methodological approaches to studying race in computing are promising and important, including those that specifically engage the previously normalized and thus invisible and unquestioned role of characteristics of dominant groups (white-

ness), as suggested by approaches to gender (masculinity), it nevertheless remains critical to place into the historical record those women and men of color who contributed to the development and innovative application of computing technologies as they have been traditionally framed. Foremost this is because without them we do not, in fact, have an accurate picture of the history of this technology. Second, they deserve the recognition. Third, demonstrating the presence and activity of actual people would go a long way toward providing support for the arguments posed by scholars in numerous fields and correcting the misimpressions held by the industry and the general public alike regarding interest and aptitude among communities of color.

The lack of source material on race and computing in traditional archival collections needs to be faced. Archives and libraries dedicated to preserving source materials should undertake proactive efforts to identify and collect materials from persons of color and organizations employing and/or serving



Figure 1. Melba C. Roy, *Ebony*, vol. 20, no. 7, May 1965, p. 6.

these communities. In the short term, scholars may find important and possibly overlooked material in sources not typically considered by the historian of computing. By engaging in an examination of popular publications by, about, and for African Americans, I was able to discover numerous, albeit brief, biographical synopses of women and men working in computing fields dating from the late 1950s. One such profile, from January 1971, reads:

"Space Center's Section Head: Mrs. Melba L. C. Roy is program production section chief at Goddard Flight Center in Greenbelt, Md., one of nine research installations of the National Aeronautics and Space Administration (NASA). She heads a team of mathematicians who design large-scale computer programs aimed at determining the orbits of spacecraft launched at Cape Kennedy, Fla. One of the few ranking women with NASA, Mrs. Roy got the post in 1961 after two years as mathematician. She is a 1950 graduate of Howard U., where she later earned her degree"² (see Figure 1).

At least 57 African American professionals engaged with computers and computing between 1959 and 1996 can be found in the column "Speaking of People" of *Ebony* magazine. The limited amount of information on

each person profiled would require additional research in order to construct detailed biographies and analyses of careers. Yet, in the absence of such information, prosopographical approaches might prove useful for examining groups of professionals of color working within computing fields to reveal their existence and to study the factors that influenced their success, in respect to education and employment as well as possible common experiences of obstacles. Supplemental information may also be found in sources such as national biographies and *Who's Who* publications, although these are not without their difficulties. In *Ebony*, we find not only valuable source information but a possible lesson about the potential of examining publications not traditionally consulted in the history of computing. For if conventional, computer-oriented literature and archives are found wanting adequate information on persons of color, we might profitably turn to publications by, about and for communities of color.

The Problem of Sources

Historians such as Carolyn de la Peña,¹ Bruce Sinclair,³ Venus Green,⁴ Rebecca Herzig,⁵ and others have addressed the lack of scholarship on race primarily in respect to technology broadly defined, although their observations and propositions may well be applied to the narrower focus of computing. The lack of historical scholarship on race in technology, especially in the face of an increasing acknowledgment of its need and protestations of interest on the part of historians, was best summarized by de la Peña in a 2010 article in *Technology and Culture*.¹ Here she provided figures of the number of articles on the topic published in that journal between 1998 and 2009, which demonstrated a negligible change over time (zero published between 1989 and 1994, three between 1995 and 1998, two between 1999 and 2003, and four between 2004 and 2009). This case, she states, is in spite of the fact that increased interest in the intersections of race and technology had recently been expressed, citing Bruce Sinclair (2004),³ Carroll Pursell (2005),⁶ and Evelyn Hammonds and Rebecca Herzig (2009)⁵ as examples, leading her to observe, "Historians of technology stand at a moment when a vast discrepancy exists between what we would like to be doing and what we are accomplishing." Substantial responsibility for this state of affairs is laid upon conventional historical research methods and

sources, especially archives, as these have not been found to contain materials documenting persons of color and as they are the products of “engineers and innovators.” She states that, “The history of technology began with engineers telling stories about their own creations...Until recently, these stories did not, by and large, feature nonwhites.” It seems that this could imply that the engineers and innovators in question were white individuals who did not discuss persons of other races. That may well be the case, but it does not address the reasons why the papers and records of engineers and innovators of color, the archival materials from which stories are told, were not acquired by the institutions that collect such materials. The absence of records of persons of color would suggest either that collecting institutions did not seek them out or that there were no such individuals to create collections to be given to archives. The absence of records threatens to suggest the absence of people, a suggestion carried further by the lack of representation in historical research and writing.

Comparing efforts to address the underrepresentation of race to recent and seemingly more successful efforts to address gender, she goes on to describe the pitfalls of archival research,

...but good records that allow scholars to undertake this kind of study simply are not as plentiful as they are when they examine women (white women), as many of us know from experience. One may find, for example, photos of black, Asian American, or Latino workers, but all too rarely does one find correspondence or detailed data for the racial breakdown of workers or accounts of racial stratification in the workplace. Such documents signal the possibility of alternative technological narratives, but often the data required to write them remains elusive.⁷

From my own experience as curator and archivist for the Charles Babbage Institute, I can attest to the veracity of this statement. By way of example, in October 2014, a search performed in the photograph collection of the Burroughs Corporation records yielded 4 photographs of a single scene depicting persons of color. The images showed four men who appear to be engineers from their clothing and their manner of engagement with the computers pictured (see Figure 2). Two of the men, featured as the central focus of the images, appear to be African American. From the collection of thousands of company photo-



Figure 2. Wayne County Commission, 1962. Burroughs Corporation Records. Photograph Collection, 1946-1963 (CBI 90, Series 68), negative 5810. Charles Babbage Institute, University of Minnesota.

tographs, these four images from a single photo shoot were the only photographs found that depicted African Americans. They are also the only images representing nonwhite persons working in higher-level positions alongside white colleagues. The company's corporate newspaper, *The B-Line*, did feature African Americans and other persons of color but seemingly only in lower level manufacturing positions. So far we have not found supplemental documentation that identifies the men or discusses the department or project in which they were engaged.

To get around the lacunae in archives, de la Peña recommends reconfiguring the methodological approach. She again refers to methods undertaken in order to examine women in computing, which included “research that inserts women into meta-historical narratives, and that which explores the importance of women in the design and innovation process through their roles as consumers,”⁷ strategies she deems unfeasible for race because, again, “either purpose requires archives with relevant documents,” which for women have been found in personal papers of white women who demonstrated themselves to be innovators or the

papers of their husbands. Instead, de la Peña advocated a third approach that also reflects one taken in respect to women, which was to turn the focus away from *women* and to look instead at *gender*. Thus, in the same way that men have gender that influenced social constructions and technical decisions in technology, even (or especially) in homosocial environments such as all-male laboratories where gender is likely to be invisible, white people have race that similarly exerts a strong influence while remaining normalized and thus unseen.

The need for more concrete examples can be seen across academic disciplines. Outside of history, scholars such as Anna Everett,⁸ Mark Dery,⁹ Ron Eglash,¹⁰ and Alondra Nelson¹¹ have given significant consideration both to African American technophilia and to the discursive conventions that have rendered it invisible in popular consciousness. Everett's work on blackness and technology across African and African diasporan communities includes not only her own scholarship but her work initiating interdisciplinary dialog among and for scholars of "Black Studies, African Diaspora Studies, Science and Technology Studies, Critical Race Studies, and Postcolonial Studies."⁸ Nelson edited *Future Texts*, a special issue of the journal *Social Text* that examines (predominantly) computer technology from an Afrofuturist perspective.¹¹ Most of the contributors to these collections address the issue of race, specifically the African American experience, from scholarly perspectives focused on literary and cultural criticism and generally in contemporary contexts, although they make some reference to historical figures.

One concern I have regarding an emphasis on "whiteness" in the history of computing is that it will perpetuate assumptions that overlook or deny acknowledgment of the presence and contributions of persons of color. A prevailing theme in the work of scholars of critical race studies, new media studies, and others is "the myth of black disingenuity with technology."¹² In *AfroGEEKS*, Everett writes emphatically about "black technolust"¹³ and "African American early adoption of and involvement with prior innovative media technologies"¹⁴ amid "dominant assumptions about how black communities actually use and develop strategies for incorporating new information media and communication technologies in their everyday lives"¹⁵ and the fact that "dominant media institutions insist on per-

petrating an image of black people as poster children for the digital divide's pathologizing rhetoric."¹⁶ In his contribution to that volume, Mark Dery writes: "Official mythmakers, such as the mainstream media and the expert elite whose wisdom they channel, have reinforced Rousseau-ian notions of black culture as oral, tribal, and above all authentic"¹⁷; and later "The near-total absence of computer-savvy blacks...from the mass myth and the managerial elite of the Information Age is no coincidence. You don't have to be a card-carrying Derridean to buy the post-modern article of faith that the stories we tell ourselves, as a culture, help shape our reality."¹⁸

Scholars studying education also report that the acceptance of popular perceptions that African Americans possess low-levels of (or completely lack) computing interest and aptitude, are reinforced by teachers and passed along to students as well. The authors of *Stuck in the Shallow End: Education, Race, and Computing* write:

"[W]e observe how different competencies and interests are linked with different racial groups—for students and educators at Westward High School, computer science has become identified with white and Asian male students. These associations are so ingrained that students, teachers, and administrators alike leave the imbalances unquestioned, as part of the 'natural sorting' of interests that occurs among students. (Kao 2000). The result is that most students at Westward are denied key resources that would allow them to nurture a curiosity or aptitude for computer science, and this untapped curiosity is then seen as indicative of a lack of innate interest or ability."¹⁹

Denial of resources goes well beyond access to the technology itself. Initiatives were successively implemented to provide schools, rural communities, and underserved populations with computers and then internet access. Some programs, like the 2000 Clinton-Gore agenda for creating digital opportunity, additionally emphasized the need for properly trained teachers. A third level, however, is creating the cultural sensitivity to understand why spaces like computer rooms are constructed and/or perceived as spaces for white males, thereby creating "soft" barriers to others. Assumptions made about inherent levels of interest normalize the absence of non-white and female students. Ron Eglash notes:

"While the figure of the black nerd contradicts the normative opposition between African

American identity and technology, it does so only by affirming the uncool attributes of technological expertise. The consequences can be tragic for the many African American students and teachers whose interest and identification with science and technology lead to accusations that they are 'acting white.'"¹⁰

The lack of African Americans featured in the history of computing helps to establish and reinforce this misperception among the general populace and the computer industry and among young African Americans themselves, who, seeing a strongly white institution, infer that the field is not welcoming to them and who consequently develop narratives that divorce technological interest and aptitude from black cultural identity.

This vicious cycle underscores the importance of highlighting the achievements and contributions to computing of pioneering African American women and men, especially as these were won amid the broader challenges of racial discrimination in the workplace and society at large. Bruce Sinclair notes that "rather than simply the shell or emblem of racist thinking, defining African Americans as technically incompetent and then—in a kind of double curse—denying them access to education, control over complex machinery, or the power of patent rights lay at the heart of distinctions drawn between black and white people in this country." To refute these presumptions we need to locate, publicize, and study the lives and contributions of those women and men of color who were and are part of computing. Scholars in other fields would also benefit from examples of historical persons of color in computing. Despite the impassioned appeals to early adoption and innovation among African and African diasporan people, Everett provides only one concrete example of an individual noted for his contributions to the field, the Nigerian-born computer scientist, engineer, and mathematician Philip Emeagwali. As noteworthy as his contributions may be, he is but one example among many who remain unrecognized.²⁰

It is further important to recognize the achievements and contributions of these scientists, engineers, and professionals because without them the entire conversation on race and computing is distorted. All too often the focus in discussions on race and technology, even among those with the best of intentions, is on the economic and educational deficits faced by segments of the African American community. Such problems

deserve attention. Advocates for educational and vocational equality have discussed the problems of the "digital divide," a term that Everett discussed (above) in respect to its 'pathologizing rhetoric.'" Such a response may be explained by Alondra Nelson:

"Though meant to draw attention to true disparities, the well-meant concept of the digital divide is Janus-faced: there are indeed critical gaps in technological access and computer literacy that are comprehensible through the prisms of race, gender, socioeconomics, region, and age. Nonetheless, this paradigm is frequently reduced to race alone and thus falls all too easily in stride with preconceived ideas of black technical handicaps and 'Western' technological superiority. ... the underlying assumption of much digital divide rhetoric is that people of color, and African Americans in particular, cannot keep pace with our high-tech society."¹¹

The contemporary discussion of the digital divide (a term coined in the mid-1990s, ostensibly in connection with the growing importance of personal computers due to their increased connectivity via the Internet and variously attributed to Lloyd Morrisett of the Markle Foundation and Albert Hammond and Larry Irving in the Clinton administration) continues similar discussions going back to the late 1960s when civil unrest sparked interest in the causes of urban unemployment, with computer professionals expressing interest in providing training for the "disadvantaged."²¹ The truth is that many African Americans have been systematically deprived of education and opportunity. Poverty has been and is real, but that is not the only form of systemic discrimination faced by African Americans. Roy L. Clay, Sr., educated in mathematics at St. Louis University, recounted his experience seeking a job with McDonnell Aircraft. "Someone met me in the lobby," he recalled, "and told me, 'Mr. Clay, I'm very sorry, but we don't hire professional Negroes.'"²² There are lots of opportunities to address fundamental wrongs, those of the economically disadvantaged are but one, although often they seem to be the only ones recognized, and the discussion rarely if ever addresses the gifts and potential of the community at any end of the class scale. It is the silence in respect to accomplished individuals of color that influences conversations about the poor and that tend to characterize discussions of African Americans as a whole. The danger of this is that individuals and communities are subject to characterizations

that feature need and lack, deficits that are perceived as essential to their personhood, minimizing recognition of talents, aptitudes, and potential. Framing the issue of how to help a group of people based on perceived deficits rather than recognized assets affects the avenues seen as open to them and anticipated outcomes, including the potential benefits for the individual, the target community, and the broader society as a whole.

A more complete record of the women and men of color who held positions as computer scientists, engineers, and mathematicians in corporate, government, and military positions from the early days of computing to the present would go a long way toward providing both historians with the data they require for examining race and computing and provide other scholars with examples needed to refute spurious and purportedly harmful presumptions.

In order to accomplish this, I see two different approaches that should be pursued in light of the acknowledged lack of necessary materials in archives. First, archives have an obligation to seek out new types and sources of materials to add to their holdings. Second, historians have opportunities to consider nontraditional sources, both within and outside of archival repositories. Professional and academic disciplines hold their own preconceived notions about what constitutes appropriate or profitable sources. Also, persons within such disciplines are not immune to prevailing cultural preconceptions, even those individuals genuinely interested in expanding the attentions of their fields. Such cultural norms and expectations may thus influence the collection development decisions of libraries and archives as well as the research focus of historians and other scholars. Approaches to correcting the absence of particular perspectives within archival collections and library holdings may include seeking out the identities and then the papers of engineers and innovators of color. It may also include seeking out alternative sources, the nontraditional publications by persons and organizations not located within the computing fields but who may have had things to say about it, pro and con.

De la Peña states that the absence of relevant archival material “forces us to confront the problem of archives that stubbornly resist articulating issues of race.”²³ Here de la Peña specifically refers to the creative analysis of materials readily found in archives, archival

collections, records, and papers discovered already in situ in their institutional homes, having been acquired and processed perhaps years or decades before. As an archives professional, when I think of the “archives,” I think of the identity of the institution itself and specifically the agency held by the institution and the persons within it to determine what is collected. Thus, my reading of the resistance of archives is the resistance of individuals and institutions to critically examine and modify collection development policies. Institutional resistance to expanded collection scopes may represent explicit attempts to marginalize or exclude specific individuals or groups, but they are more likely to be the result of conditioned expectations about what subjects and agents constitute the legitimate purview of a scholarly discipline. In combination with the limited resources that institutions face (e.g., storage space, staff to process collections), conservative collection management policies that resist scope drift are likely to be maintained. Thus, although this is not what de la Peña here intends, I believe it is important to remind scholars that the library and archives staff with whom they work (often) have authority over collection development policies and both seek out and respond to inquiries about the possible acceptance of new materials. Engagement with scholars and scholarly research can help library and archives professionals to understand the cultural shifts in scholarship that demand attention be paid to persons, institutions, and topics previously deemed out-of-scope in a field of study like computing. They can and should be encouraged to use their institutional authority to situate and contextualize underrepresented stories within the history of technology by expanding policies and practices when needed.

The broader examination of intersections of race and computing, in areas like education, employment, development, access, and use, is important. The specific case studies that de la Peña introduced on the development of artificial sweeteners and the purported skin-whitening effects of x-rays are intriguing, yet there remains a significant need to address the historical role of persons of color involved in computing fields. I am concerned about the potential loss of important knowledge and understanding if we were to focus our attention solely on this methodological approach to race and technology and not continue striving both to place the missing persons of color active in technology back

into the historical record and to address the current failures of archival collections. Nina E. Lerman's discussion of the relationship between "technology" as a keyword and as a category of analysis suggests that recognizing historically defined boundaries does not limit our focus to the subjects contained within them but rather allows us to see beyond them to include other materials, processes, and actors.¹ In her discussion of the need for a more inclusive term than "technology" in our contemporary use and understanding of the word, Lerman writes, "In short, X, as we claim to define it, defies many of the purposes and powers of 'technology' and aims to interrogate the very dangers of determinism, passivity, and fatalism that Leo Marx identifies with the label."²⁴ Thus, recognizing the role of whiteness in computing does not need to mean maintaining focus solely on its influence. Rather, it might encourage us to look beyond the normalized boundaries of historical inquiry. In this way, historians may look to intersections of computing and culture, as the musician George Lewis did in his autoethnographic essay "*Living with Creative Machines: an Improvisor Reflects*,"²⁵ or Raiford Guins in, "*May I Invade Your Space? Black Technocultural Production, Ephemera, and Video Game Culture*."²⁶ However, this does not mean that we should remain incognizant of those African Americans working within traditionally recognized structures and definitions. Noteworthy about much writing on computing technology by African Americans is that it is largely conservative and optimistic, advocating for education in and use of computing technology, while critics who address computing's impact on jobs and the economy, warfare, and the environment are often white. Lerman, drawing on Leo Marx, states that the application and use of the term "technology" in the 20th century "helped limit access to things and knowledge—to a new kind of power—without sounding undemocratic."²⁶ The limitation of access to knowledge may be the kind of explicit denial of education that Bruce Sinclair discussed (mentioned above), but it may also be denial of the recognition of knowledge held and accomplishments achieved. Thus, while heretofore unrecognized practices and loci should be included in analyses of computing technologies, they should not be conflated with racial or ethnic identity to the point that those persons of color working within and contributing to traditionally defined practices continue to remain unseen.

It is and should be a matter of "both/and" not "either/or."

The assessment and analysis of nontraditional materials may require the use of new interpretive techniques. In respect to traditional archival holdings, de la Peña states:

"Yet bringing it [whiteness] up poses a challenge for practitioners in a field in which particular kinds of evidence are valued and a certain amount of objectivity is required to do 'good work.'" Studying whiteness means working with evidence more interpretive than tangible; it requires imaginative analyses of language and satisfaction with identifying possible motivations of subjects, rather than definitive trajectories of innovation, production, and consumption.²⁷

Rhetorical analyses of extant textual and visual materials to tease out the underlying assumptions and intents of their (white) creators may well be needed for the kind of expanded perspective on race that de la Peña advocates. Nevertheless, tangible data are available for persons of color, although location and analysis may also require the use of approaches and methods not widely used currently among historians of computing.

The Potential of Prosopography

A shift in the interest of historians in the early 20th century from an emphasis on select few individuals to the situations and roles of groups of people provided the impetus behind prosopographical analysis.²⁸ Prosopography, sometimes referred to as "collective biography" or "multiple career-line analysis" examines data gathered on groups of individuals in order to explore relationships and commonalities between persons of a defined category as well as to trace the influences, impacts, and/or the social mobility of the group.²⁹ As an approach to historical research, prosopography has received attention from historians of science in the study of Victorian notions of "the inventor"³⁰ and to the development of a broader understanding of "the scientific community" in Britain.³¹ It has not been applied as much to the specific study of the history of computing, though it appears to hold promise here as writers and critics react against the persistence of the "great men" model of historical storytelling in the field.³² Some studies have begun to look at classes of computer professionals, such as David Alan Grier's *When Computers Were Human* and Nathan Ensmenger's *The Computer Boys Take*

Over. The prosopographical study of African Americans within computing may clarify the fact that they were present—and in larger numbers than have previously been detailed. This is significant on its own. It might further suggest commonalities in backgrounds, opportunities, and obstacles encountered, institutional contexts, and contributions. To understand the full experience of this group of people and the individuals that make it up, it must be recognized that they are representative not just of their cultural and racial or ethnic communities but of the profession as well. Thus, further study of other groups within computing—by job title, employer, education—would further benefit the study of persons of color within the field.

Because previous historical work has been recognized as having focused on the accomplishments of white men, it seems that some effort must be made to explore the accomplishments and contributions of women and men of color. Prosopographical research provides a starting point for historical inquiry, which will require seeking additional sources, some of which I suggest throughout the remainder of this article. Nevertheless, beyond merely adding to the biographies of individuals prosopography suggests themes related to broader trends and influences. Thus, we may ask not only “Were there African Americans in computing?” but also:

- Over time, what paths to success in computing have communities of color forged for themselves or have been opened to them?
- Have opportunities or barriers, and the strategies used to contend with them, persisted or changed over time? If so, why?
- Were some industries more open than others to hiring and promoting professionals of color?

Such inquiries could provide important context for the current state of efforts to address the so-called “pipeline” issue, from education to meaningful employment. Furthermore, scholars could confront the tendency to view racial groups as monolithic by exploring questions such as:

- Did different regions have different types of support, either internal to the community (the work, faith, educational communities of support and value sys-

tems in particular regions), or were these comparable regardless of geographic location within the United States?

- What was the range of economic class among this demographic and what, if any, impact did that have on rates of success in education and employment?

Source information needed to compile the data essential for prosopographical analysis can vary. Susanna Fellman, for her study of the professionalization of managers in Finland, drew on *Who's Who* publications, company registers and histories, memoirs, biographies, and obituaries.³³ Biographical dictionaries have also been cited as primary sources. Lawrence Stone credited the *Dictionary of National Biography* (DNB) as aiding the development of prosopography in the 20th century. Of this “supreme achievement of [the] century-long English movement for collective biography,” Lawrence states, “When the first historical prosopographers got down to work after the First World War, they therefore found at hand a mass of biographical information already collected and in print, merely waiting to be analyzed, collated, and used to construct an intelligible picture of society and politics.”³⁴ Both MacLeod and Nuvolari and Shapin and Thackray cite the DNB in their studies, the latter of whom also cite the *Dictionary of Scientific Biography*. A problem with such dictionaries is that they are organized by name and thus one would have to already know the names of individuals for whom biographical details were being sought. Shapin and Thackray specifically address this fact and state, “What we cannot do is to start with names known to us through their science; first we must find out who published science, then assess the intellectual and cultural significance of their association with the enterprise of natural knowledge.”³⁵ Such a task requires a great deal of time-intensive work in the absence of digital texts, which appear to be unavailable.³⁶

Furthermore, although one may be able to identify the gender of given entries by names and pronouns (and even that may be misleading), information pertaining to race and ethnicity may not be so easily found. Conversely, there are a number of black national biographies. Of those I was able to review, however, entries pertaining to the sciences were minimal, if present. The most complete I discovered is *Contemporary Black Biography* (vol. 123, 2015). Surveys of computer pioneers similarly lack substantive numbers of

profiles on African Americans and other persons of color. A promising source may be the *Who's Who in Computers and Data Processing* (1971). Cross-referencing its index with that of *Contemporary Black Biography* may elicit some results. Also, prosopography can include company employee lists and school yearbooks. Yearbooks from Howard University are available online. Furthermore, United States Census data may be used to aid in identifying broad trends or perhaps for filling in specific information for known individuals. A 1974 article by Bruce Gilchrist and Richard E. Weber on the growth of computer programming as a field used census data and even provided a breakdown of programmers by sex and race.³⁷ Also to be included are the rosters or conference programs of professional organizations such as the Black Data Processing Associates, founded in 1975, and the National Society of Black Engineers, incorporated in 1976 from a foundation starting at Purdue in 1971.

It should be noted here that significant opportunities exist for studying the histories of such organizations as these, as well as the educational programs offered at Historically Black Colleges and Universities (HCBUs) like Howard University, mentioned above. The college and university archives of HBCUs are currently available to historians, even if not found within centers for the specific study of information technology. Similarly, professional organizations may well have their own archival records within their own custody and may be accessible to scholars who inquire. I would advocate, however, for these to be situated within repositories recognized for their holdings in computing in order for their work to be better discoverable to historians and understood to hold an important place within the history of computing. Other inquiries may well be achievable through reexamining the records of organizations already within traditional archives. Despite the aforementioned misapprehensions about persons of color and technological interest and aptitude, the industry has had an ongoing relationship with various communities of color, ranging from controversies over employment practices to the establishment of discrete educational and employment programs.³⁸ Examination of such programs may include asking:

- Who initiated the program?
- What goals were expressed and what outcomes anticipated?

- What assumptions are evident in the characterization or implementation of programs?
- What do these and other factors suggest about the success or sustainability of the programs?

These are some of the questions on my own work out-of-school programs established in the late 1960s (referenced above) explores with the aid of the records of the Association for Computing Machinery. Materials exist but resist discovery because such initiatives were not established with current views regarding diversity in industry, but rather, engagement with communities of color were obfuscated by the contemporary rhetoric of aid to the disadvantaged. Thus, although I continue to assert the need for targeted archival collecting initiatives, scholars should not be unduly impeded from engaging in inquiries into race and computing now.

The Lesson of Ebony Magazine

This initial compilation of data toward a prosopography of African Americans in computing fields draws foremost from *Ebony* magazine. Articles on computing span much of the run of the magazine and address a number of topics and contexts including full-length feature articles on trends in consumer products, education and employment, issues pertaining to data privacy and social media, and profiles of high-level corporate leaders. The focus of this study, however, is on a column called "*Speaking of People*" that started in 1949 and appears to have run until 2007. This column featured brief biographies of four to six individuals, men and women in a variety of professions, detailing their careers, responsibilities, educational and professional backgrounds, and sometimes even personal information such as marital status, children, and hobbies. The monthly editorial preface to the issue, "*Backstage*," for September 1949 provided this introduction: "*'Speaking of People,'* our new department calling attention to Negroes doing outstanding and unusual jobs, is open to nominations from our readers."³⁹

The column regularly featured professional women and men from a wide variety of careers. The effect is to normalize computing and technological careers as simply one of many paths open to African Americans. In addition to the brief biographies provided in this column, *Ebony* also published feature articles on successful individuals.



Figure 3. Gwendolyn Hunt, *Ebony*, vol. 25, no. 1, November 1969, p. 6.



Figure 4. Sylvia Fitt Jones, *Ebony*, vol. 20, no. 7, November 1966, p. 6.

Between 1959 and 1996, fifty-seven profiles in the “*Speaking of People*” column featured individuals employed in positions in or related to computing (see Figures 3–5). The fact that so many people active in computing professions can be found within the pages of

a magazine aimed at a general audience of African American readers whereas so little information has been found in traditional sources of archival materials from the computing field(s) suggests that, rather than focusing on what the computing industry has had to say about persons of color, it may be more profitable to examine what communities of color have had to say about computing. Although it is encouraging to see what may appear to be a large number of African American people in computing jobs, it needs to be remembered that the individuals featured by the magazine are but a sample selected by the editors. As MacLeod and Nuvolari caution, the analysis of individuals selected by other editors, “should go hand-in-hand with a critical reflection on the selection criteria followed by the compilers of collective biographies that furnish the source materials for this type of prosopographical exercise.” Following this advice, I searched the magazine for any past or current selection criteria or statement of purpose. The “*Backstage*” column of May 1975 states that:

Ebony magazine has long been of the opinion that black folk can make it in this or any other society. It has been proved over and over again that, given the proper education under the proper conditions, black people can become just as talented as any other people in such things as building bridges, synthesizing chemicals, designing furniture, painting masterpieces, inventing complicated tools or writing creative works of fiction.

During the nearly 30 years of our existence as the number one black publication in the world, we have proved over and over that even in a hostile climate and armed with an inferior education from second rate schools, blacks have challenged the odds and have become highly successful within the system, earning fame and even fortune in fields other than the expected sports and entertainment categories.

Stories in *Ebony* are often published primarily to serve as role models for our young, to show that “you, too, can make it.” Our long-standing feature, *Speaking of People*, has been invaluable in providing role models for talented youngsters. In fact, schools, churches, and other organizations regularly use this department as a motivating force for their young people.⁴⁰

This description of the intentions of the piece do not specify criteria for the selection of individuals featured in the column. It may

be surmised that “successful” people would be the likely candidates, but the determination of success can be broad. The individuals who appear in the column range widely in hierarchical positions. It is more probable that the purpose indicated above accounts for the content of the biographies, which sometimes include potential motivators such as salary and often include information on education pursued, years of service in that and earlier companies, and entry level positions taken and sacrifices made to get to where they were at the time of the article.

While focusing on this specific column in *Ebony*, I have supplemented this source with research into additional sources, generally suggested by the content of the articles in *Ebony*.⁴¹ As stated above, many of the individual profiles included information about the featured individual’s education. I searched college yearbooks to find any additional information pertaining to the individual or their specific degree and course of study. In some cases this led to the identification of more persons who could be included in the list, though they required further research in order to identify information pertaining to their careers subsequent to schooling. Most helpfully, yearbooks were found to be available online for Howard University,⁴² an HBCU that appeared in a number of the profiles in *Ebony*. Other schools mentioned in profiles were not able to be found online, ranging from large extant institutions, like Harvard University, to small schools that appear no longer to exist, such as Cortez W. Peters Business College in Chicago, an African American business school. The yearbooks for Harvard are available to researchers who can travel to the University’s archives. It is not know that similar publications for smaller schools remain available today—or that they were ever published in the first place.

One of *Ebony*’s profiles stated that the individual had been featured in other publications, including *Who’s Who of American Women*, so that source was able to be found. Biographical dictionaries of this sort seem to offer a potential source of further information, but they are difficult to use for a number of reasons. Compounding the problem of alphabetical organization mentioned above, the sources examined were only available in print, making keyword searching for terms like “computer,” “programmer,” and “systems analyst” impossible. Thus, such works help to flesh out information on known persons but do not aid discovery of persons who meet the



Figure 5. Bettina L. Yancey, *Ebony*, vol. 22, no. 9, July 1967, p. 7.

study’s parameters. Further, information pertaining to race and ethnicity is not necessarily included, further hindering opportunities to identify persons who meet those parameters. Additional information about known individuals came from online search engines. Sources ranged from historical African American newspapers to Wikipedia.

The existence of these professionals can potentially serve to counteract any extant notions among tech educating, recruiting, and hiring entities that African Americans lack interest and/or aptitude for computers and computer work, as well as ideas among African Americans themselves that computer work is not “authentic.” I don’t think, however, that employment of African Americans by computer (or other) companies as featured here in any way alleviates concerns about the employment practices of the high tech industry. The percentage of people of color is still too low. If anything it should demonstrate that arguments about a lack of qualified, talented people to be hired are unfounded.

Initial Summary Findings

These profiles were discovered through a keyword search within EBSCO’s Master File

Premier database using keywords in four separate searches. The keywords used were “computer,” “operator,” “programmer,” and “analyst.” These profiles were written for general audiences and did not always include the same information or present it in exactly the same way. The headings of individual profiles featured a job name or description that often varied from what appears to have been the official job title of the person, often found within the body of the profile. Thus some profiles featured a term like “computer” when the specific job title did not include it, although the following details provided about the job justified its inclusion in the heading. Conversely, some headings lacked any terms that would have flagged the following profile as being computer-related, but the content of the profile warranted its inclusion in this study. Because of this, a complete analysis of the content of the column should include a thorough review of all profiles that appeared during its run between 1949 and 2007, but for the current study only those issues that came up as a result of the keyword searches have been investigated.

I selected profiles for inclusion if they met one of the following three criteria: the job was specifically identified as that of a computer operator, programmer, or systems analyst; the content of the profile revealed that the person had been responsible for the implementation or use of computers within the context of their (noncomputer) business; or the job was an administrative, managerial, or support position for a computer company that indicated some level of computer knowledge or proficiency had been required or would have been attained in the course of performing the responsibilities of the job. This last group includes a range from high level company executives to lower-level support positions, but I included them all because even the lowest level positions suggested potential for providing significant education and training in computers and computing.

As stated above, the specific content of the profiles varied, at least in terms of specific information, but most contained at least minimal information regarding level and specific fields of education, including multiple degrees when applicable. Education information often included the name of colleges, university, private training schools, or relevant military and on-the-job training. Profiles occasionally included previous jobs held. Most provided a minimal description

of responsibilities, duties, and/or notable accomplishments. Some provided personal information such as hobbies and community involvement, place of origin, marital status, and the number and names of children.

From the information compiled on the individuals identified according to the criteria above, some basic information is immediately discernable. It bears repeating that the sample group of people was selected by the editorial staff of *Ebony*, so although the analysis here provides insight into the makeup of this group of people, it is not yet possible to say how representative they are of the broader community of African American women and men working in computing and computing-related positions. Also, although it may be obvious, I should also state that this group of people is limited to African Americans, naturally, because of the mission of the magazine. I believe that similar inquiries into publications by, about, and for other communities of color could be undertaken as well.

Of the 57 people identified between 1959 and 1996, 38 (67%) were men, and 19 (33%) were women. I also examined the distribution of individuals profiled and their gender over time. Twenty-four individuals were profiled between 1959 and 1969. Of this group, 13 (54%) were men, and 11 (46%) were women. Fourteen individuals, 9 men (64%) and 5 women (36%), were profiled between 1970 and 1979. Eighteen were profiled between 1980 and 1989, 15 (83%) men and 3 (17%) women. Only one profile, a man in 1996, was found in the 1990s. Again, it is possible that a more meticulous search of profiles appearing in the run of the column would reveal additional persons who warrant inclusion in this data set.

Of the 57 profiles included, 15 descriptions made no mention of specific education or degrees earned, whereas 42 profiles mentioned at least general information about education or training, and many profiles provided a detailed list of multiple degrees earned. Among the 42 profiles mentioning education, 47 degrees were earned, including 27 bachelor's degrees (3 Bachelor of Arts, 11 Bachelor Science, and 12 “bachelors”), 16 master's degrees (1 Master of Arts, 5 Master of Science, 7 “masters,” and 3 Master of Business Administration degrees), and 2 Doctor of Philosophy and 2 Doctor of Jurisprudence degrees. Two individuals earned certificates in training programs. Most degrees (13) were

in some branch of engineering, including electrical, industrial, mechanical, nuclear, and aerospace. Nine degrees were in some branch of mathematics. Five were in business administration and/or marketing. Two were in physics. One degree was in computer science technology. Other degree programs mentioned included fine and liberal arts, history, psychology, social work, economics, and education. Four vocational training programs were in data processing or computer technician. The specific schools where education was pursued ranged from private educational institutes and programs to Ivy League universities. Forty-one were accredited institutions, 11 of which (25%) were HBCUs.

Specific job titles were grouped into each of the three categories mentioned above by my own subjective interpretation. Those in my first category were involved with creative or developmental roles with computers and included various levels of jobs such as programmer, engineer, systems analyst, mathematician, designer, and various directors, supervisors, and managers. My second category included those who used, operated, or implemented computers. This group included jobs such as management analyst, administration manager, sales manager, and director of costs and systems control. The third category of persons who served in support functions within technology companies included operations manager, librarian, attorney, and vice presidents of operations, human resources, and similar departments.

Although the utility of prosopography often lies in statistical analysis of data about groups, some branches use specific case studies, and some historians may wish to use prosopography as a starting point for more in-depth work. The examination of specific individuals can also be both instructive and interesting. Thus, although the intention of this paper is simply to suggest a method and to point toward sources, I would like to feature two of the people found in Table 1, Melba L. C. Roy, whose profile appeared above, and Consuelo S. Milner. Milner's profile, which reads:

"Navy Electronics Engineer: Consuelo S. Milner is an Electronics Engineer, CS-12 at the Brooklyn Navy Yard and became the first woman ever to hold that high a professional rating in the agency's history when she was promoted last fall after 10 years' service. Most

of Mrs. Milner's work is top secret but includes supervision of five employees. She originally started her academic training in dress designing but switched to engineering because of her interest in mathematics and science. The Hollis, L. I. engineer is working on a master's degree, has patent pending on quartz crystal design"⁴³ (see Figure 6).

Milner was also mentioned in "*Cyberculture and Girls*," a short article appearing in the July 4, 1964 "*Talk of the Town*" section of the *New Yorker*. The article, which discusses the First International Conference of Women Engineers and Scientists, sponsored by the Society of Women Engineers, reads: "Mrs. Consuelo S. Milner (in black and pink), who is working on a highly classified cryptography project for the Naval Applied Science Laboratory, in Brooklyn, and holds a patent on a quartz-crystal frequency-control unit...."⁴⁴

Drawing on the information found in Roy's profile, I searched the 1950 *Bison*, Howard University's yearbook, which lists her as Melba L. Chloe from Manassas, Virginia, majoring in mathematics and minoring in physics. She was president of the Kelly Miller Chapter of Future Teachers of America at Howard University and a member of the National Association for the Advancement of Colored People (NAACP) Mathematics Club and the Delta Sigma Theta sorority. She was on the Dean's Honor Roll for four years and is among twenty-four Howard University students to be listed in the 1949-1950 edition of *Who's Who among Students in American Universities and Colleges*. Roy is now found online as Melba Roy Mouton; her Wikipedia page cites two marriages and provides further information about her birth in Fairfax, Virginia and death at the age of 61.⁴⁵ She is also featured in a number of Websites and Tumblr accounts dedicated to women in science, technology, engineering, and math (STEM) fields.

Notable not only for the study of race and computing but also for women in computing is the number of African American women who, from early in the development of the field, held high level positions. It is interesting to note that, although women make up only 33% of the total number of individuals profiled (19 of 57) of the 24 jobs identified as highly technical, computer centered positions, women held 16 of those jobs (47%). Thus, 16 of the 19 women profiled held positions as scientists, engineers, and programmers rather than support functions.

Table 1. Individuals studied from *Ebony's "Speaking of People"* column, and selected details

| Issue and publication date | Name and title | Employment and education details |
|-----------------------------------|---|--|
| Vol. 14, no. 6 (Apr 1959) | James C. Thomas Accounting system analyst, Accounting and Finance Center of the Service, Denver, CO | <ul style="list-style-type: none"> Established a mechanical system for analyzing and evaluating Air Force accounting reports Suggested the change to mechanical computation, given full responsibility in setting it up |
| Vol. 15, no. 10 (Aug 1960) | Dr. Evelyn Boyd, space computing mathematician, Space Computing Center, Washington, DC | <ul style="list-style-type: none"> Supervised 3 employees Formulated calculations for NASA's Mercury Project Summa cum laude graduate of Smith College, Northampton, MA Advanced degrees from Yale University, New Haven, CT Served as research assistant at New York University, New York, NY Previously employed by US Department of the Army for three and a half years |
| Vol. 15, no. 10 (Aug 1960) | Dr. William C. Curtis, engineering manager, Radio Corporation of America (RCA), New York, NY | <ul style="list-style-type: none"> Engineering supervisor and manager of radar data processing Employed in the firm's Defense Electronic Products section Supervised 17 employees Four engineering degrees, including the PhD in Engineering Sciences and Applied Physics (Harvard University, Washington, DC) Previous employment: Dean of Engineering, Tuskegee Institute, Tuskegee, AL |
| Vol. 17, no. 8 (Jun 1962) | Noel W. Greenidge, digital computer programmer, New York City Housing Authority | <ul style="list-style-type: none"> Computer programming coordinator Directed installation of a 1401 Digital Computer |
| Vol. 18, no. 6 (Apr 1963) | Gaynelle J. Ferguson, space systems programmer, North American Aviation Inc., Los Angeles, CA | <ul style="list-style-type: none"> In charge of the Delta System, computer programs for production analysis of Hound Dog Missiles and Apollo and Saturn space vehicles Previous employment: \$80-a-month messenger for the County of Los Angeles |
| Vol. 18, no. 6 (Apr 1963) | Consuelo S. Milner, electronics engineer CS-12, Brooklyn Navy Yard, NY | <ul style="list-style-type: none"> First woman ever to hold a high professional rating in the agency's history; promoted after 10 years of service Supervised 5 employees Holds patent pending on quartz crystal design Started academic training in dress design but switched to engineering because of her interest in mathematics and science |
| Vol. 18, no. 12 (Oct 1963) | First Lt. Anthony A. Bell, bionics projects engineer, Bionics and Computer Branch, Wright-Patterson Air Force Base, OH | <ul style="list-style-type: none"> Investigation of biological control systems of animals and humans Duplication of behavior principles in engineering control systems |
| Vol. 18, no. 12 (Oct 1963) | Jewell E. Williams, space instrument designer, Honeywell Regulator Co, Minneapolis, MN | <ul style="list-style-type: none"> Instrument designer for the Apollo vehicle project Supervised 3–4 employees Was once told he was near-genius and was therefore "over-qualified" for the available job |

Table 1. Continued

| Issue and publication date | Name and title | Employment and education details |
|----------------------------|--|---|
| Jul 1964, Vol. 19, no. 9 | Newton Smyley, radar system designer, Sperry Corp, Lake Success, NY | <ul style="list-style-type: none"> • Senior engineer • Group leader in the design and development of radar systems • Missile improvement project • Received special commendation from the commander of a Navy guided-missile center for his innovations • Fine arts (Xavier University, Cincinnati, OH) • Bachelor's and master's degrees in Engineering (Brooklyn Polytechnic Institute, Brooklyn, NY) |
| Vol. 19, no. 9 (Jul 1964) | William Churchill, computer system translator, Sperry Gyro-scope Co, Great Neck, NY | <ul style="list-style-type: none"> • Translated complex technical problems into terms the computer can understand and solve • Used computer to produce assembly instructions for microcircuit wiring for the digital Loran-C receivers • Morehouse College graduate |
| Vol. 19, no. 9 (Jul 1964) | Robert King, administrator at Space Center, Westing-house Defense and Space Center, Baltimore, MD | <ul style="list-style-type: none"> • Engineering project administrator, control and computing systems section of development engineering • Graduate, University of Pittsburgh • 1956 joined Westinghouse atomic power division, atomic reactor program, as project coordinator |
| Vol. 19, no. 7 (May 1964) | Carl F. Nixon, systems analyst, Minneapolis Honeywell Regulator Co., Denver, CO | <ul style="list-style-type: none"> • Gather and arrange data on administrative systems, prepare flowcharts, run information through the electronic computer |
| Vol. 20, no. 7 (May 1965) | Ms. Melba L. C. Roy, program production section chief, God-dard Flight Center, Greenbelt, MD | <ul style="list-style-type: none"> • Headed team of mathematicians who designed large-scale computer programs aimed spacecraft orbits • One of the few ranking women with NASA • 1950 graduate of Howard University, Washington, DC |
| Aug 1966, Vol. 21, no. 10 | Ms. Patricia D. Graves, computer systems expert, TRW Systems Inc, Redondo Beach, CA | <ul style="list-style-type: none"> • Responsible for mathematical analysis, programming, and graphical representation of engineering problems arising in guidance systems and missile simulation • "[I]n other words," she said, "I am a human computer." • \$7,500 annual salary • Graduate, Howard University • Studied mathematics at UCLA, Los Angeles, CA |
| Vol. 22, no. 1 (Nov 1966) | Ms. Sylvia Fitt Jones, IBM computer expert, Honeywell, Inc., New York, NY | <ul style="list-style-type: none"> • Responsible for training customer and company personnel in computer programming and technology • Earned more than \$10,000 annually • "My most significant achievement," she said, "has been my growth within the Honeywell company from an associate instructor to the highest position in my department other than the education supervisor." • BA (Hunter College, New York, NY) |
| Vol. 22, no. 1 (Nov 1966) | George W. Andrews, data processing manager, Fromm and Sichel, Inc, San Francisco, CA (distribu-tors of The Christian Brothers wines and brandies) | <ul style="list-style-type: none"> • Manager of the data processing department • Processed all accounting statements for his area • Supervised 3 employees • earned \$8,000 a year • Attended high school and junior college in Pueblo, CO • Studied data processing at the Automation Institute and IBM school in Los Angeles, CA |

Table 1. Continued

| Issue and publication date | Name and title | Employment and education details |
|-----------------------------------|--|---|
| Mar 1967, Vol. 22, no. 5 | Dawn Villerej, assistant librarian, Computer Sciences Corp, El Segundo, CA | <ul style="list-style-type: none"> • Used computerized indexing system to process, review, and integrate documents • Indexed professional journals, computer manuals, and Defense Documentation Center publications • In charge of the firm's locked depository of classified information |
| Vol. 22, no. 9 (Jul 1967) | Ms. Bettina L. Yancey, computer programmer, US Army Tank-Automotive Command, Warren, MI | <ul style="list-style-type: none"> • Devised programs for high-speed processing of requisitions for parts • Listed as one of the "Ten Outstanding Women Who Work," Central Business District of Detroit, Detroit, MI • Originally from Wadesboro, NC • Blind computer programmer |
| Vol. 23, no. 2 (Dec 1967) | Donald Moss, computer supervisor, RCA Communications Inc., New York City, NY | <ul style="list-style-type: none"> • Supervised 7 employees in data processing operation • Attended Brooklyn College, majored in business administration • Joined RCA as a service clerk • Promoted after RCA training course |
| Vol. 23, no. 2 (Dec 1967) | Nathaniel W. Woodrick, advisory meteorologist, IBM, Federal Division, Space Systems Center, Bethesda, MD | <ul style="list-style-type: none"> • Conceived and developed techniques for observing remote meteorological phenomena and deriving information on weather conditions • Native of Birmingham, AL • BS in physics (Tennessee University, Knoxville, TN) • Graduate work in aerospace engineering (Catholic University of America, Washington, DC) • Air Force veteran |
| Vol. 24, no. 6 (Apr 1969) | Charles E. Bryant, manager, Scientific Computing Operations Department, Lockheed-Georgia Co, Marietta, GA | <ul style="list-style-type: none"> • Supervised 21 computer programmers, 40 computer operators, and 13 other personnel • Operated and maintained firm's computers • 1949 Morehouse graduate in liberal arts • First computer experience consisted of part-time position at the US Naval Gun Factory, Washington, DC, while studying architecture at Howard University, Washington, DC |
| Vol. 25, no. 1 (Nov 1969) | Gwendolyn Hunt, systems analysis programming supervisor, US Navy Pacific Missile Range HQ, Point Mugu, CA. | <ul style="list-style-type: none"> • Devised coding language and programs for range's computers • 1956 graduate in mathematics (Tennessee A&I University, Nashville, TN) • Previous employment with IBM, drew up programs for hypothetical computers, predicting predict operation if constructed |
| Vol. 25, no. 1 (Nov 1969) | Howard U. Perkins, insurance company cost controller, Continental Casualty Co, Chicago, IL | <ul style="list-style-type: none"> • Director of costs and systems control • Oversaw more than \$1 million in expenses • Approved design of computer systems for keeping records • Studied in the Army Management Engineering Training Program, Rock Island, IL • Worked as a management analyst and as deputy employment policy officer for the federal government |

Table 1. Continued

| Issue and publication date | Name and title | Employment and education details |
|-----------------------------------|---|--|
| Vol. 26, no. 3 (Jan 1971) | Dwyla J. Tunstall, associate engineer, Consumers Power Co, Jackson, MI | <ul style="list-style-type: none"> • Used computer codes to make calculations involved with controlling nuclear fission reactors • Bachelor's degree in mathematics (Maryville College, St. Louis, MO) • Master's degree in nuclear engineering (Iowa State University) |
| Vol. 26, no. 3 (Jan 1971) | Philip W. Kemp, administration manager, IBM Office Products Division, Minneapolis, MN | <ul style="list-style-type: none"> • Supervised 20-member section • Bachelor's degree in history |
| Vol. 26, no. 9 (Jul 1971) | Alfred E. Richardson, manager, Computer Time-Sharing Sales Division, General Electric, Milwaukee, WI | <ul style="list-style-type: none"> • Oversaw complete operation of GE's Wisconsin branch office • Firm's first black computer branch sales manager • Master's degree in social work • Left his position as a probation officer in New York to enter the computer business as a GE salesman in 1967 |
| Vol. 26, no. 9 (Jul 1971) | John C. Butler, electronics firm package designer, Cook Electric Co, Evanston, IL | <ul style="list-style-type: none"> • Design printed circuit boards and wiring systems for components of Cook's telephone transmission equipment • Former draftsman at General Time Corp, where he learned product design and helped develop the printed circuit boards for the first Apollo moon flight |
| Vol. 26, no. 10 (Aug 1971) | Gilbert H. Dupuch, reservations sales manager, National Air Lines, Inc, Miami, FL | <ul style="list-style-type: none"> • Supervised sales and confirmed airline's Res-A-Vision computer system • In 1968, one of five reservation managers responsible for introducing computerization into telephone sales • Physiology major; studied at Florida A & M University and University of Miami, Coral Gables, FL • Came to National as a reservations agent in 1967 |
| Vol. 26, no. 10 (Aug 1971) | Dorothy J. Boler, publications library head, International Business Machines (IBM), Jackson, MS | <ul style="list-style-type: none"> • Supervised operation of the firm's data processing and periodicals library • Assisted computer salesmen and systems engineers in preparing IBM programs for both internal and customer use • Bachelor's degree in education (Tougaloo College, Tougaloo, MS) • Joined the firm three years prior as a secretary |
| Vol. 27, no. 3 (Jan 1972) | Lisa M. Walker, computer programmer, General Mills, Inc, Minneapolis, MN | <ul style="list-style-type: none"> • Coded computer instructions for testing, monitoring, and documentation of location and tracing information for customer shipments • Education programs offered by General Mills |
| Vol. 27, no. 4 (Feb 1972) | Edward B. Adams, operations manager, IBM, Information Records Division, Boulder, CO | <ul style="list-style-type: none"> • Responsible for manufacturing and development of computer tape and magnetic cards • Supervised staff of 350 employees • Responsible for annual production of over half a million miles of computer tape • Bachelor's degree in industrial engineering |

Table 1. Continued

| Issue and publication date | Name and title | Employment and education details |
|-------------------------------|---|---|
| Vol. 28, no. 1 (Nov 1972) | Arthur Somner, director of technical research and development, New York City Off-Track Betting Corp, New York, NY | <ul style="list-style-type: none"> Analyzed computer systems Investigated existing and developing computer equipment to accommodate New York's legalized betting system Supervised staff of 18 employees Monitored network to ensure peak efficiency Master's degree in computer science technology (Columbia University, New York, NY) Co-authored a book on office management and administrative services |
| Vol. 28, no. 9 (Jul 1973) | William F. Martin, systems analyst, Hart Schaffner & Marx, Chicago, IL (men's clothing manufacturer) | <ul style="list-style-type: none"> Developed computer programs and procedures for the firm Studied accounting and business administration (Pittsburgh Academy and Cortez W. Peters Business College, Chicago, IL) |
| Vol. 30, no. 12 (Oct 1975) | Ms. Mary C. Wilson, data operations manager, Atlantic Container Line, Ltd, New York City, NY | <ul style="list-style-type: none"> Supervised 17 employees Responsible for computer operations, data control and data preparation production, and scheduling Joined Atlantic Container nearly six years prior; promoted from data control supervisor |
| Vol. 31, no. 7 (May 1976) | Robert H. Stewart III, principal programmer, Sperry Univac's Philadelphia research and development center, computer division of Sperry Rand Corp, Philadelphia, PA | <ul style="list-style-type: none"> Product leader for emulation development for a major series of Sperry Univac computers BS degree in business administration, 1965 (West Virginia State College, Institute, WV) Certificate in data processing, Electronic Computer Programming Institute, Philadelphia, PA Also studied at Temple University, Pennsylvania, PA, and American University, Washington, DC |
| Vol. 32, no. 2 (Dec 1976) | Ms. Shirley Sellers, systems analyst, Scott Paper Co, Philadelphia, PA | <ul style="list-style-type: none"> Assisted in designing and developing new order processing systems and analyzing other systems BS in mathematics (Bennett College, Greensboro, NC) MS in numerical science (Johns Hopkins University, Baltimore, MD) Senior programmer prior to promotion to systems analyst |
| Vol. 33, no. 4 (Feb 1978) | Ms. Janis Miller, second vice-president for data processing, Standard Security Life Insurance Co., New York City, NY | <ul style="list-style-type: none"> Responsible for all data processing functions company-wide Supervised 20 employees Member of the Computer Data Processing Certification Council Listed in <i>Who's Who of American Women</i>, <i>Dictionary of International Biography</i>, and <i>Notable Americans</i> |
| Vol. 36, no. 6 (Apr 1981) | Howard Taylor, computer systems manager, Avery International, San Marin, CA | <ul style="list-style-type: none"> Responsible for directing the system's analysis and programming staff in computer systems development and programming functions Conducted company feasibility studies Member of the Data Processing Management Assn |
| Vol. 36, no. 6 (Apr 1981) | Ms. Patricia S. Deering, data systems supervisor, AT&T, Piscataway, NJ | <ul style="list-style-type: none"> Responsible for the technical training of AT&T's employees in New Jersey and at field locations across the country 1986 graduate of Wake Forest University |

Table 1. Continued

| Issue and publication date | Name and title | Employment and education details |
|-----------------------------------|--|--|
| Vol. 36, no. 8 (Jun 1981) | Robert E. Range, manager of government procurement programs, RCA/Automated Systems, Burlington, MA | <ul style="list-style-type: none"> • Manager of government procurement programs; responsible for assisting buyers in locating qualified small and minority-owned businesses; handles tool control, statistical studies, and audits for purchasing activities |
| Vol. 36, no. 8 (Jun 1981) | Joseph C. Gayle, senior systems analyst of computer operations, Bergen County Dept. of Data Processing, Hackensack, NJ | <ul style="list-style-type: none"> • Directed operations of the multi-computer complex, processing county information, including voter registration and the county payroll • Supervised 25 employees • attended New York University, NY, NY |
| Vol. 37, no. 8 (Jun 1982) | James E. Smith, regional computer systems administrator, employment and training administration, US Department of Labor, Dallas, TX | <ul style="list-style-type: none"> • Advised/assisted regarding automatic data processing operations • BS (Texas College) |
| Vol. 38, no. 12 (Oct 1983) | Dr. John H. Bennett, corporate data processing director, United Technologies, Hartford, CT | <ul style="list-style-type: none"> • Responsible for United Technologies' data processing worldwide, including standards development and budget review • Mathematician • Bachelor's, master's, PhD (Harvard University) |
| Vol. 38, no. 12 (Oct 1983) | Kenneth L. Coleman, vice president of human resources, Activision, Inc., Mountain View, CA | <ul style="list-style-type: none"> • BS and MBA (Ohio State University, Columbus, OH) |
| Vol. 38, no. 12 (Oct 1983) | Richard Warren Terrell, manager of large scale integration packaging and component engineering, IBM, San Jose, CA | <ul style="list-style-type: none"> • Bachelor's in engineering (Cal Polytechnic State University, San Luis Obispo, CA) • Master's (San Jose State University, San Jose, CA) |
| Vol. 39, no. 4 (Feb 1984) | Howard Smith, computer systems division research and development manager, Hewlett-Packard, Cupertino, CA | <ul style="list-style-type: none"> • Responsible for developing operating systems and systems processing units • Supervised 200 employees • Served on the advisory board of Project Interface in Oakland • BS in mathematics (Los Angeles State College, Los Angeles, CA) • M.S. in mathematics (San Jose State University) |
| Vol. 39, no. 4 (Feb 1984) | Andrea Pair Bryant, patent attorney, IBM, Austin, TX | <ul style="list-style-type: none"> • Worked as an instructor and a programmer for IBM • BS in physics magna cum laude (Morgan State College, Baltimore, MD) • Fullbright fellow in physics • JD (Georgetown University, Washington, DC) |
| Vol. 39, no. 6 (Apr 1984) | Theodore E. Martin, vice president and general manager, Industrial Controls Division, Bendix Automation Group of Allied Corp, Burbank, CA | <ul style="list-style-type: none"> • Computer numerical control and metal forming/cutting robots • BA in economics (Syracuse University, Syracuse, NY) • MBA (University of Hawaii, Honolulu, HI) |
| Vol. 39, no. 6 (Apr 1984) | Weldon Latham, associate general counsel, Planning Research Corp; and general counsel, Sterling Systems Inc, Long Lake, MN | <ul style="list-style-type: none"> • Services in architectural engineering, computer services, real estate services and specialized systems engineering for government. • Degree in business (Howard University, Washington, DC) • JD (Georgetown University, Washington, DC) |

Table 1. Continued

| Issue and publication date | Name and title | Employment and education details |
|-----------------------------------|--|--|
| Vol. 39, no. 8 (Jun 1984) | McHenry Norman, computer training director, Hewlett-Packard, Cupertino, CA | <ul style="list-style-type: none"> • Computer technician graduate (Data Control Institute) • Electronics specialist, US Air Force • Joined Hewlett-Packard in 1969 and later initiated Black Students Career Day |
| Vol. 39, no. 8 (Jun 1984) | Ronal E. Butler, supervisor of the Computer Support Group, Melpar Division, E-Systems Inc, Falls Church, VA | <ul style="list-style-type: none"> • Selected and ordered computer equipment • Provided computer support and training • Supervised 15 engineers, programmers and technicians • BS degree in mechanical and electrical engineering • Was pursuing a master's degree in electrical engineering |
| Vol. 39, no. 11 (Sep 1984) | Donaldo A Laird, corporate international auditor, IBM, South America | <ul style="list-style-type: none"> • Audited IBM companies • 100 percent travel • Bachelor's degree in psychology (Brooklyn College, Brooklyn, NY) • Master's degree in criminal psychology (John Jay College of Criminal Justice, New York, NY) • Veteran of IBM for 15 years • Started with IBM as a computer operator trainee following a three-year Army stint |
| Vol. 40, no. 4 (Feb 1985) | Joseph Avery, vice president for operations, Activision Inc, Santa Monica, CA | <ul style="list-style-type: none"> • Prior, manufacturing manager, Data Systems Division, Hewlett-Packard Co.; also held positions in data processing, production control, materials and manufacturing |
| Vol. 41, no. 5 (Mar 1986) | Donald B. Butler, corporate personnel manager, IBM-Research Triangle Park, NC | <ul style="list-style-type: none"> • Managed nearly 100 employees who oversee services and advice for approximately 9,500 IBM workers • Company's fifth largest plant/laboratory. • Graduated from Howard University, Washington, DC |
| Vol. 43, no. 1 (Nov 1987) | Delilah Smith, principal engineer, Computer Science Corp, Huntsville, AL | <ul style="list-style-type: none"> • Member of the National Society of Black Engineers • BS in electrical engineering (University of Alabama, Auburn, AL) |
| Vol. 42, no. 7 (May 1987) | Curtis J. Crawford, marketing division area manager, IBM, Armonk, NY | <ul style="list-style-type: none"> • Oversaw 5,000 employees in Michigan, Ohio and West Virginia • BA and MA degrees in business administration and marketing (Governor's State University, University Park, IL) • M.B.A. (DePaul University, Chicago, IL) • Held several managerial positions at IBM over 13 years, including director of marketing and regional manager for mid-America region 7 |
| Vol. 51, no. 7 (May 1996) | Lorenzo B. (Skip) Wyatt, general manager, IBM Western Area, San Francisco, CA | <ul style="list-style-type: none"> • Top marketing executive for an 11-state region • Oversaw a staff of 3,000 • Responsible for the firm's business operations selling of IBM hardware and software • Bachelor's degree in mathematics and business (Carson Newman College, Jefferson City, TN) • Joined company in 1972 as a marketing representative |

Suggestions for Further Prosopographical Inquiry: Sources and Approaches

The number of people identified in *Ebony*'s column over the years should encourage us to look at other sources with the hope that we may identify more of the African American women and men engaged in computing throughout its development. Next steps could include a more detailed examination of *Ebony* itself, as well as other publications by and for African Americans. It should also encourage us to look to the publications of other underrepresented communities. A useful starting point is to acknowledge and examine the interest and experience of these communities by looking to publications by, about, and for persons of color. If nothing else, they should challenge ideas about disinterest or disingenuity among members of these communities. If such publications can further aid investigations into the specific women and men who have worked in and contributed to the field, it may give us enough information in order to initiate longer and more difficult examinations of sources such as company rosters, school yearbooks, and biographical dictionaries, in order to complete information on known persons and to identify additional individuals. With more complete information, then prosopographical analysis may help answer questions such as those posed above.

With the identification of these professionals, next steps would be for libraries and archives to seek out individuals and approach them regarding their own personal papers and collections in order to meaningfully contribute to the archival resources upon which historians will continue to depend, even with an expanded awareness of nontraditional sources. Historians and centers for historical research may wish to embark on oral history projects specifically aimed at recording the experience and knowledge of these long-undervalued pioneers. I would hope, too, that with the increased awareness of professionals of color in computing fields over the years, young persons of color will see both the computing field as one representing a genuine and authentic experience for them and the history of computing as being part of their own history. Thus, the history of computing may itself be opened up to a broader community of contributors and perspectives.



Figure 6. Consuelo S. Milner, *Ebony*, vol. 18, no. 6, April 1963, 6.

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4. V. Green, "Race and Technology: African American Women in the Bell System, 1945–1980," *Technology and Culture*, vol. 36, no. 2, Supplement: Snapshots of a Discipline: Selected Proceedings from the Conference on Critical Problems and Research Frontiers in the History of Modern Technology, Madison, Wisconsin, October 30–November 3, 1991, Johns Hopkins University Press, 1995, pp. S101–S144; V. Green, *Race on the Line: Gender, Labor, and Technology in the Bell System, 1880–1980*, Duke University Press, 2001.
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8. A. Everett and J.A. Wallace, eds., *AfroGEEKS: Beyond the Digital Divide*, Center for Black Research Studies, University of California, 2007.
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12. Nelson, *Social Text*, p. 5, quoting from an interview with Evelyn Hammonds.
13. Everett and Wallace, *AfroGEEKS: Beyond the Digital Divide*, p. 5.
14. Everett and Wallace, *AfroGEEKS: Beyond the Digital Divide*, p. 4.
15. Everett and Wallace, *AfroGEEKS: Beyond the Digital Divide*, p. 1.
16. Everett and Wallace, *AfroGEEKS: Beyond the Digital Divide*, p. 3.
17. Dery, *AfroGEEKS: Beyond the Digital Divide*, p. 34.
18. Dery, *AfroGEEKS: Beyond the Digital Divide*, p. 35.
19. J. Margolis et al., "Normalizing the Racial Divide in High School Computer Science," in *Stuck in the Shallow End: Education, Race, and Computing*, MIT Press, 2008.
20. Emeagwali is also not African American, which is the group on which my present study focuses. It should also be noted, however, that Everett discusses technological adoption at all levels, including individuals and organizations who are not professionally associated with computing. These examples further support her discussion of the broad interest in computing technologies among African Americans generally, but they do not contribute to the recognition of the number of computer professionals of color.
21. This is the subject of my paper, "Concern for the 'Disadvantaged': Computer Training Programs for Communities of Color in the Late 1960s" presented at the 2015 SIGCIS Workshop, SHOT Conference, October 11, 2015, Albuquerque, New Mexico, and subsequently expanded and published as "Concern for the 'Disadvantaged': ACM's Role in Training and Education for Communities of Color (1958–1975)," in *Communities of Computing: Computer Science and Society in the ACM*, T.J. Misa, ed., Association for Computing Machinery and Morgan & Claypool, 2017.
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28. L. Stone, "Prosopography," *Daedalus*, vol. 100, no. 1, *Historical Studies Today*, Winter 1971, pp. 46–79.
29. In his 1971 article, "Prosopography," Lawrence Stone states that modern historians refer to the practice as "collective biography," whereas social scientists use the term "multiple career-line analysis." Although these alternatives are sometimes mentioned in passing, among those articles that I have read, the terms "prosopography" and "prosopographical analysis" were consistently used. I have not investigated studies by social scientists.
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32. A. Schaffer, "Tech's Enduring Great-Man Myth," *Technology Review*, August 4, 2015; <http://www.technologyreview.com/review/539861/techs-enduring-great-man-myth/>. Amanda Schaffer's critical review suggests that contemporary histories have tended to prefer narratives that isolate and apotheosize individual innovators like Steve Jobs and Elon Musk at the expense of recognition of multiple agencies leading to technological development and other individuals who have built computing through a vast number of contributions. Thus, most people who have worked in the field over its history are not recognized, and African Americans are not along.
33. S. Fellman, "Prosopographic Studies of Business Leaders for Understanding Industrial and Corporate Change," *Business History*, vol. 56, no. 1, 2014, pp. 1–21.
34. Stone, *Daedalus*, p. 49.
35. Shapin and Thackeray, *History of Science*, p. 14.
36. MacLeod and Nuvolari acknowledge their study received support from The Netherlands Organization for Scientific Research—British Council Partnership Programme in Science and the Arts and Humanities Research Council.
37. B. Gilchrist and R.E. Weber, "Enumerating Full-Time Programmers," *Communications of the ACM*, vol. 17, no. 10, 1974, pp. 592–593.
38. Recently a notable contribution to this investigation was made by Sarah McLellan (College of William and Mary) in her Robinson

Prize-winning paper, "Computing and the Color Line: Race, Gender, and Opportunity in Early Computing at NASA," delivered at the 2015 Meeting of the Society for the History of Computing. In addition to engaging issues of gender and race in employment practices, McLellan also drew in part on popular publications as source material.

39. *Ebony*, vol. 4, no. 11, September 1949, p. 14. The first actual appearance of the column, however, was one month prior in vol. 4, no. 10, August 1949.
40. *Ebony*, vol. 30, no. 7, May 1975, p. 30.
41. For this study, I have limited myself to entries in "Speaking of People," but some longer profiles of individuals are to be found in the magazine. Thus, although their information is not included in the analysis that follows, I want to mention Thomas A. Wood, President of Decision Systems, Inc., featured in "Computer Company President" (*Ebony*, vol. 21, no. 3, 1966, pp. 95–102); Robert Dodson, a high school student who built computers at home ("Computer Whiz Kid," *Ebony*, vol. 25, no. 2, 1969, pp. 101–104); and David Hedgely, mathematician ("NASA Computer Whiz," *Ebony*, vol. 41, no. 5, 1986, pp. 62–66). Additionally, feature articles on broader discussions but discussing individuals include Pamela Noel ("The Computer Revolution: Will Blacks Be Left Behind?" *Ebony*, vol. 39, no. 7, 1984, pp. 59–64; "High Tech: Wining Success in Silicon Valley," *Ebony*, vol. 40, no. 1, 1984, pp. 37–40).
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43. *Ebony*, vol. 18, no. 6, 1963, p. 6.
44. "Cyberculture and Girls," *New Yorker*, 1964, p. 23. The classified nature of Milner's work is also addressed in *Ebony's* profile of her.
45. "Melba Ray Mouton," *Wikipedia*, December 18, 2015; http://en.wikipedia.org/w/index.php?title=Melba_Roy_Mouton&oldid=695717179; http://en.wikipedia.org/wiki/Melba_Roy_Mouton.



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